with ice, then, by means of a scale placed within the stem, the instrument can be used for measuring the pressure of the air. Experiment shows that this barometer fulfils the three above-mentioned conditions.

The object to be attained by Dr. Fischer is one very much desired by all, but as Professor Marvin has remarked, it will be so difficult to keep the water bath at a constant temperature in a balloon, especially when the water freezes at high altitudes, that the above arrangement will be of little value. The uncertainties due to assuming a constant temperature will always be greater than the errors of the aneroid barometer and it seems more rational to labor to bring the pressure boxes of the aneroid to at least as great perfection as the temperature boxes of the Bourdon thermometer.

The arrangement by Fischer would, we think, be inferior to a simple, straight tube, sealed at the top and open below, immersed in a bath of alcohol, glycerine, or other liquid, and having one or two thermometers closely adjoining. The length of the compressed air column, or rather its volume, and the records of the two thermometers give us the means of allowing for the vapor tension of alcohol and the reduction of the air volume to a standard temperature, whence the pressure becomes known. But, of course, in order to attain an accuracy of one one-hundredth inch of barometric pressure, one must know the volume of air to within one three-thousandth part, which implies knowing its temperature to within one-sixth degree Fahrenheit. This seems at first thought easy, but when the balloon is rapidly rising or falling, the expansion or compression of the air within the tube takes place adiabatically, except in so far as heat may be conducted through the glass tube, and this complicates the determination of the temperature.

LECTURES AND INSTRUCTION.

E. W. McGann, Section Director, delivered a lecture on August 22 before the Farmers' Convention at Jamesburg, N. J., on the Weather Bureau and the State weather service and what they are doing for the farmers. He continued the course of lectures on this subject before the farmers' institutes of New Jersey during the autumn and winter, but owing to the poor heating of the halls at Vineland and Hammerston he contracted a severe cold that temporarily incapacitated him from lecturing; his lecture on December 19, at Caldwell, was very well received.

Under date of November 30, Prof. Wm. M. Fulton reports his attendance at farmers' institutes, at New Market, Clarksville, and Fayetteville, Tenn. The entire middle portion of the State was well represented at these institutes and much interest was manifested by the large audiences in the evening as well as by questions during the sessions in the day time. About two thousand farmers were present, and it is believed that the value of the Weather Bureau to farming interests in this State is being greatly enhanced by the discussions at these meetings.

The institutes held at Memphis, Bell Buckle, and at Nashville during December were very well attended, nearly every county in the State was represented.

Mr. David Cuthbertson, local forecast official at Buffalo, N. Y., lectured before the Men's Club of Lewiston, N. Y., on Friday evening, December 14, and again Saturday morning before the Union School of that city, on the work of the Weather Bureau and its relations to the commercial and marine interests.

Mr. S. S. Bassler, local forecast official, Cincinnati, Ohio, writes that the public schools of that city are now informed by telephone of the forecasts of cold waves, high water, and other meteorological matters, so that the information will reach every home in the city through the children in addition to the usual methods of dissemination.

Mr. Bassler delivered the first lecture of the winter course on December 14, for the Alumni Association of the Bellevue, Ky., High School, on the study of meteorology in the public schools. A large audience paid very close attention.

Mr. J. Warren Smith delivered an address on the work of the Weather Bureau at Lerado, Clermont County, Ohio. The lecture was illustrated and apparently well received. Mr. Smith states that he is really unable to comply with all the requests for lectures before the farmers' institutes, but he has no doubt that such work benefits the public.

On September 21 Mr. A. E. Hackett, Section Director at Columbia, Mo., undertook the instruction of a class in meteorology and climatology in the Missouri State University. The class will meet on Thursdays and Saturdays, one hour each day. The instruction in meteorology will be elementary in character and the work in climatology will be confined to a study of the more important climatic features of the several portions of the United States.

Mr. R. Q. Grant, Observer Weather Bureau, gave a lecture on cyclones and weather forecasting in the Science Building at the State College, Lexington, Ky., Monday, December 10.

THE USE OF THE M. W. REVIEW BY TEACHERS.

We have with much interest noted the steady increase in the circulation of the MONTHLY WEATHER REVIEW among the teachers in high schools, academies, and colleges. We understand that this is largely due to the fact that all the newer text-books on physical geography, physiography, and meteorology, and the journals devoted to those subjects make frequent reference to and quotations from the REVIEW. In fact, Prof. Richard E. Dodge, at the head of the department of geography of the teachers' college in Columbia University, in a recent review of Ward's Practical Exercises in Elementary Meteorology, emphasizes the fact "that the MONTHLY WEATHER REVIEW is an essential aid in good teaching." We take it that this means that both the climatological data and the excellent special contributions from our numerous correspondents are highly appreciated by those who are developing a true system of education, based upon the study of nature and not solely on the language and literature, the abstractions and myths of human invention. One can not acquire a broad education except by going outside of books and studying with enthusiasm the world as it really is, not as man imagines it. That education is most valuable which brings us into close contact with nature, animate and inanimate; with living men and women; with the facts and laws of chemistry and physics.

AERIAL VOYAGES BY BALLOONS AND KITES.

The following interesting letter by A. Lawrence Rotch is copied from Science, December 14, Vol. XII, page 930:

The official report just received of the long-distance balloon race from Paris on October 9 changes somewhat the figures on page 799 of Science, which were those furnished to the press. It appears now that Count de la Vaulx and a companion traveled 1,200 miles in 35 hours and 45 minutes in the basket of a balloon containing only 57,000 cubic feet of illuminating gas. They reached a maximum height of 3½ miles, crossed Germany and landed in Russia, as did another of the contestants. This is probably the longest continuous voyage in the air ever made, although it was nearly equaled forty years ago by our countryman, John Wise, who, with two companions, went by balloon